REMARKS

Claims 1-45 are pending in the application and presently stand rejected under 35 U.S.C. § 103(a) as being unpatentable Rom (U.S. Patent No. 6,307,568) in view of Volino ("An Evolving System for Simulating Clothes on Virtual Actors," Computer Graphics in Textiles and Apparel, 42-51, (September 1996)) and further in view of Sakaguchi (CA Patent No. 1,259,788). Applicant traverses all of the rejections and generally reiterates the remarks made in response to the previous office action. The following comments are intended to aid the examiner in understanding the differences between applicant's claimed invention and the prior art of record.

Claims 1, 16, 19, 29, 32, 34, 38, and 44

With respect to the rejections of claims 1, 16, 19, 29, 32, 34, 38, and 44, the final office action states that Rom teaches "(c)onstraining portions of the garment to reside within or outside of particular shells defined around the mannequin in the rendering frame (col. 2, lines 34-42; fig. 2) In other words, Rom determines garment adjustment points of the garment spatial configuration. The determining points are the particular shells that defined the spatial configuration of the image." There are a number of problems with this argument. As noted in the final office action, the Rom reference only deals with two-dimensional images and has no teachings that relate to three-dimensional representations of objects. Thus, the "garment adjustment points" described in Rom are not shells that constrain portions of the garment in a three-dimensional rendering frame as recited in applicant's claims. It is evidently the examiner's contention that combining the garment adjustment points of Rom with the teachings relating to three-dimensional modeling of garments found in Volino would somehow result in the shells claimed by applicant or something similar. This cannot be, however, because the garment adjustment points of Rom are not even two-dimensional analogues of such shells. Instead, as best understood, they are a means for manipulating the spatial configuration of a two-dimensional garment image, where "spatial configuration" refers to the size and shape of the garment image corresponding to available sizes of the actual garment being represented (See col 5, lines 42-63).

A three-dimensional rendering frame, as the term is used in applicant's specification, is essentially a data structure containing a three-dimensional representation of a mannequin wearing a garment after a draping and collision simulation has been performed. In order to generate a two-dimensional image which can actually be viewed, referred to as "rendering," the rendering frame is processed by an appropriate rendering function. The shells referred to in the present application are three-dimensional constructs which are added to the rendering frame and act as surrogates for other garments in order to allow composite images of multiple garments to be rendered from separate rendering frames each containing only one garment. A particular version of a garment is defined to be combinable with one or more other particular garments and is rendered from a rendering frame in which the garment is constrained to reside within or outside of particular predefined shells around the mannequin. The constraining shells serve to mimic the collisions with another garment that would take place were a simulation to be performed with that other garment. This allows a plurality of different versions of each garment image to be created and stored in a repository so that multiple garment images can be layered on a two-dimensional rendering of a mannequin, with the garments being rendered from rendering frames in an independent manner. Creating versions of garments at the level of the three-dimensional rendering frame, instead of in the two-dimensional garment image itself, permits large numbers of viewing perspective renderings to be generated from a single version rendering frame in a consistent manner. The garment adjustment points of Rom, on the other hand, may affect various size dimensions of the two-dimensional garment image, but they do not otherwise affect how a particular sized garment fits over a body in a resulting two-dimensional image. It thus appears to applicant that the garment adjustment points of Rom are in no way similar to the shells claimed by applicant, and no amount of combining with teachings relating to three-dimensional modeling can make them so.

The final office action further states that Rom discloses "(g)enerating rendering frames containing mannequin or garment objects as defined by selected parameter values by shape blending corresponding objects of previously generated rendering frames (col. 1, line 53 to col. 2, line 11; col. 7-8; figs. 1-3)." The office action further states that "Sakaguchi specifically teaches generating rendering frames containing mannequin or garment objects as defined by selected

parameter values by shape blending corresponding objects of previously generated rendering frames (page 31-second paragraph to page 33)." Shape blending, as the term is used in the present application and as commonly understood in the computer graphics field, refers to a function that, given a source and a destination 3D object, computes a new 3D object whose shape is in between the source and the destination object. As an example, given a 3D model of a small body and a 3D model of big body, the blend shaping function will create a new body shape of medium size. In the present context, shape blending techniques are used to modify the mannequin and/or garment 3D polygonal structure to desired selected parameter values by interpolating between the corresponding 3D polygonal structure parameter values of previously generated mannequin and/or garments, referred to as reference rendering frames. Garment and/or mannequin parameter values corresponding to the desired changes are modified within a reference rendering frame, and a partial further simulation is performed that creates a new rendering frame containing the changed mannequin and/or garment. The parameters are thus keyframed within the simulation sequence, where keyframing refers to assigning values to specific garment or mannequin parameters in a simulation scene and generating a new frame using a linear combination of those parameter values and parameter values generated from a previous simulation. In this way, previously generated rendering frames are leveraged to produce new rendering frames with different garment and/or mannequin dimensions without the necessity of performing a complete draping and collision simulation. Applicant finds nothing in the cited portions of either the Rom or Sakaguchi references which have anything to do with shape blending. Simply adjusting the spatial configuration of a clothing image, as is asserted to be taught by Rom, is not shape blending. The cited portion of Sakaguchi, as best understood, merely refers to user selection of a particular garment shape from an index image, where an index image is defined to be an image in which a plurality of different garment shapes are arranged in a matrix. This is not shape blending either, and the "index" of Sakaguchi is not even remotely similar to the garment or mannequin parameter values referred to in the present application. Reconsideration and withdrawal of the rejections of claims 1, 16, 19, 29, 32, 34, 38, and 44 is respectfully requested.

Claims 5, 23, 42, and 45

With respect to claims 5, 23, 42, and 45, the office action states that "Rom discloses the two-dimensional images are rendered from a rendering frame using a plurality of camera positions (col. 6, lines 33-45)." Since Rom does not disclose rendering an image from a three-dimensional representation such as a rendering frame, it necessarily does not disclose rendering such an image from a rendering frame using a plurality of camera positions (i.e., viewpoints) as recited by claims 5, 23, 42, and 45. The cited portion of Rom appears to deal only with the generation of two-dimensional images with an actual camera. Reconsideration and withdrawal of the rejections is respectfully requested.

Claims 10-12 and 39

With respect to claims 10-12 and 39, the office action states that "Sakaguchi discloses the separate rendering frames are combined into a composite two-dimensional image using Z-coordinates of the objects (page 66 to 68)." Applicant finds no teaching or suggestion in Sakaguchi or the other cited references for combining separate rendering frames into a composite two-dimensional image using Z-coordinates (i.e., depth coordinates) of the objects as recited in claim 10. Applicant further finds no teaching or suggestion in Sakaguchi or the other cited references for rendering the garments contained in the separate rendering frames into separate two-dimensional garment images that are layered upon a two dimensional rendering of the mannequin to create a composite two-dimensional image as recited by claim 11, or for layering the separate two-dimensional images on a two-dimensional image of the mannequin in accordance with a compositing rule that defines in what order specific garment images should be layered to thereby generate a composite two-dimensional image of the mannequin wearing the garments as further recited by claim 12. As best understood, the cited portion of Sakaguchi deals with the generation of a stereoscopic image by using two different projections of a three-dimensional model. This is completely different from generating a single composite image from different rendering frames using depth coordinates contained in the rendering frames. Reconsideration and withdrawal of the rejections is respectfully requested.

Claims 2-4, 6-9, 13 -15, 17-18, 20-22, 24-28, 30-31, 33, 35, 36, 40-41, and 43

Applicant asserts that the recitations of claims 2-4, 6-9, 13, 17-18, 20-22, 24-28, 30-31, 33, 35, 36, 40-41, and 43 are further limitations to the patentable subject matter recited by the independent claims from which they depend and are neither taught nor suggested by the cited references in that context. Reconsideration and withdrawal of the rejections is respectfully requested.

CONCLUSION

The above remarks are supplementary to the points made by applicant's undersigned attorney in a telephone interview with the examiner on June 23, 2003. Applicant believes the claims are in condition for allowance and respectfully requests such action. If the examiner does not agree, applicant would appreciate an interview with both the examiner and the supervising examiner prior to issuance of a further advisory action. Applicant's attorney can be contacted at (847) 432-7302.

Respectfully submitted,
Carlos Saldanha et al.,
By their Representatives,

SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.
P.O. Box 2938
Minneapolis, MN 55402
(847) 432-7302

Date 6-30-03 By _____
J. Kevin Parker
Reg. No. 33,024

CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail, in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on this 30 day of June, 2003.

GREG HANSON
Name

_____
Signature